

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. through 22. Canceled

23. (Previously presented) A filter system comprising:

a first fiber optic collimator;

a free space circulator coupled to said first fiber optic collimator;

a first mirror coupled to said free space circulator;

a holographic drop filter coupled to said first mirror to diffract at least one of a plurality of WDM channels to an optical system and pass through a remainder of said plurality of WDM channels;

said optical system further comprising a lens and a second mirror coupled to each other; said optical system coupled to said holographic drop filter redirects said at least one of said plurality of WDM channels back into said holographic drop filter;

a second fiber optic collimator coupled to said holographic drop filter that collects said remainder of said plurality of WDM channels that pass through said holographic drop filter; and

a third fiber optic collimator coupled to said free space circulator that collects said one of plurality of WDM channels redirected into said holographic drop filter by said optical system.

24. (Previously presented) The filter system of claim 23 wherein said holographic drop filter is tunable.

25. (Previously presented) The filter system of claim 24 wherein said filter system is tuned by rotating said holographic drop filter such that its effective period length is altered.

26. (Previously presented) The filter system of claim 23 wherein diffraction of said at least one of said plurality of WDM channels to said optical system depends on said holographic drop filter's orientation.

27. (Previously presented) The filter system of claim 26 wherein said second mirror is positioned at a focal length of said lens such that said quasi phase-conjugate diffracted channel is in a direction opposite to said one of plurality of WDM channels diffracted to said optical system.

28. (Previously presented) The filter system of claim 26 wherein said holographic drop filter has a refractive index that can be altered by an external electric field.

29. (Previously presented) The filter system of claim 28 wherein said refractive index is between 1.35 and 1.45.

30. (Previously presented) The filter system of claim 26 wherein said holographic drop filter is made from a photorefractive crystal.

31. (Previously presented) A method to tune a filter comprising the steps of:
collimating a plurality of WDM channels by a first fiber optic collimator;
coupling a free space circulator to said first fiber optic collimator;
coupling a first mirror to said free space circulator;
diffracting to an optical system coupled to said holographic drop filter one of said

plurality of WDM channels by a holographic drop filter coupled to said first mirror; passing through said holographic drop filter rest of said plurality of WDM channels; redirecting one of plurality of WDM channels back into said holographic drop filter by said optical system;

coupling a second fiber optic collimator to said holographic drop filter to collect rest of said plurality of WDM channels that pass through said holographic drop filter; and coupling a third fiber optic collimator to said free space circulator to collect said one of plurality of WDM channels redirected into said holographic drop filter by said optical system.

32. (Previously presented) The method of claim 31 further comprising tuning of said holographic drop filter.

33. (Previously presented) The method of claim 31 wherein tuning of said filter system is done by rotating said holographic drop filter such that its effective period length is altered.

34. (Previously presented) The method of claim 31 wherein diffracting to said optical system one of said plurality of WDM channels depends on said holographic drop filter's orientation.